

HOI-14402.ST25.txt
SEQUENCE LISTING

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Benfield, Thomas Lars
Lundgren, Jens Dilling
Kempe, Thomas D.

<120> BINDING MEMBER TOWARDS PNEUMOCOCCUS SURFACE ADHESIN A PROTEIN
(PsaA)

<130> HOI-14402/16

<150> PCT/DK04/000492

<151> 2004-07-08

<150> US 60/486,647

<151> 2003-07-11

<150> PA 2003 01044

<151> 2003-07-08

<160> 56

<170> PatentIn version 3.3

<210> 1

<211> 33

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

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<223> Sequence from human antibody generated in mouse.

<400> 1

cgg gcg agt cag ggt att agc agc tgg tta gcc
Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala
1 5 10

33

<210> 2

<211> 11

<212> PRT

<213> Homo sapiens

<400> 2

Arg Ala Ser Gln Gly Ile Ser Ser Trp Leu Ala
1 5 10

<210> 3

<211> 21

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<213> Homo sapiens

<220>

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<222> (1)..(21)

<223> Sequence from human antibody generated in mouse.

<400> 3
 gtt gca tcc agt ttg caa agt 21
 Val Ala Ser Ser Leu Gln Ser
 1 5

<210> 4
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 4
 Val Ala Ser Ser Leu Gln Ser
 1 5

<210> 5
 <211> 27
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(27)
 <223> Sequence from human antibody generated in mouse.

<400> 5
 caa cag tat aat agc tat cct ccg acg 27
 Gln Gln Tyr Asn Ser Tyr Pro Pro Thr
 1 5

<210> 6
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 6
 Gln Gln Tyr Asn Ser Tyr Pro Pro Thr
 1 5

<210> 7
 <211> 321
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(321)
 <223> Sequence from human antibody generated in mouse. V-segment: 4-34
 and J-segment: JK1

<220>
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 <222> (70)..(120)

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<222> (148)..(168)

<220>

<221> CDR3

<222> (265)..(291)

<400> 7

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Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
1				5					10					15		

gac	aga	gtc	acc	atc	act	tgt	cgg	gcg	agt	cag	ggg	att	agc	agc	tgg	96
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Gly	Ile	Ser	Ser	Trp	
			20					25					30			

tta	gcc	tgg	tat	cag	cag	aaa	cca	gag	aaa	gcc	cct	gag	tcc	ctg	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Glu	Lys	Ala	Pro	Glu	Ser	Leu	Ile	
		35					40					45				

tat	gtt	gca	tcc	agt	ttg	caa	agt	ggg	gtc	cca	tca	agg	ttc	agc	ggc	192
Tyr	Val	Ala	Ser	Ser	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					

agt	gga	tct	ggg	aca	gat	ttc	act	ctc	acc	atc	agc	agc	ctg	cag	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
65					70					75				80		

gaa	gat	ttt	gca	act	tat	tac	tgc	caa	cag	tat	aat	agc	tat	cct	ccg	288
Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Tyr	Asn	Ser	Tyr	Pro	Pro	
				85					90					95		

acg	ttc	ggc	caa	ggg	acc	aag	gtg	gaa	atc	aaa						321
Thr	Phe	Gly	Gln	Gly	Thr	Lys	Val	Glu	Ile	Lys						
			100					105								

<210> 8

<211> 107

<212> PRT

<213> Homo sapiens

<400> 8

Asp	Ile	Gln	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly
1				5					10					15	

Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Gly	Ile	Ser	Ser	Trp
			20					25					30		

Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Glu	Lys	Ala	Pro	Glu	Ser	Leu	Ile
		35					40					45			

Tyr	Val	Ala	Ser	Ser	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly
	50					55				60					

Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro
65					70					75				80	

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Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Pro Pro
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
100 105

<210> 9
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<212> DNA
<213> Homo sapiens

<220>
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<222> (1)..(15)
<223> Sequence from human antibody generated in mouse.

<400> 9
ggt ttc tcc tgg agc 15
Gly Phe Ser Trp Ser
1 5

<210> 10
<211> 5
<212> PRT
<213> Homo sapiens

<400> 10
Gly Phe Ser Trp Ser
1 5

<210> 11
<211> 51
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(51)
<223> Sequence from human antibody generated in mouse.

<400> 11
gaa atc gat tat aga gga agc acc aac tac aac ccg tcc ctc aag agt 48
Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

cga 51
Arg

<210> 12
<211> 17
<212> PRT
<213> Homo sapiens

<400> 12

Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys Ser
1 5 10 15

Arg

<210> 13

<211> 21

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(21)

<223> Sequence from human antibody generated in mouse.

<400> 13

ggg ggg ccc cgc ttt gac tac
Gly Gly Pro Arg Phe Asp Tyr
1 5

21

<210> 14

<211> 7

<212> PRT

<213> Homo sapiens

<400> 14

Gly Gly Pro Arg Phe Asp Tyr
1 5

<210> 15

<211> 345

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)..(345)

<223> Sequence from human antibody generated in mouse.

V-segment: 4-34, D-segment: unknown, J-segment: JH4b

<220>

<221> CDR1

<222> (91)..(102)

<220>

<221> CDR2

<222> (148)..(199)

<220>

<221> CDR3

<222> (191)..(312)

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<400> 15
cag gtg cga cta cag cag tgg ggc gca gga ctg ttg aag cct tcg gag      48
Gln Val Arg Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Pro Ser Glu
1          5          10          15

acc ctg tcc ctc acc tgc gct gtc ttt ggt ggg tcc ttc agt ggt ttc      96
Thr Leu Ser Leu Thr Cys Ala Val Phe Gly Gly Ser Phe Ser Gly Phe
          20          25          30

tcc tgg agc tgg atc cgc cag acc cca ggg aag ggg ctg gag tgg atc      144
Ser Trp Ser Trp Ile Arg Gln Thr Pro Gly Lys Gly Leu Glu Trp Ile
          35          40          45

ggg gaa atc gat tat aga gga agc acc aac tac aac ccg tcc ctc aag      192
Gly Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
          50          55          60

agt cga gtc acc ata tta aga gac acg tcc agg agc cag ttc tcc ctg      240
Ser Arg Val Thr Ile Leu Arg Asp Thr Ser Arg Ser Gln Phe Ser Leu
65          70          75          80

aag ttg agc tcc gtg acc gcc gcg gac tcg gct gtg ttt tat tgt gcg      288
Lys Leu Ser Ser Val Thr Ala Ala Asp Ser Ala Val Phe Tyr Cys Ala
          85          90          95

aga ggg ggg ccc cgc ttt gac tac tgg ggc cag gga acc ctg gtc acc      336
Arg Gly Gly Pro Arg Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
          100          105          110

gtc tcc tca
Val Ser Ser
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<210> 16
<211> 115
<212> PRT
<213> Homo sapiens

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Gln Val Arg Leu Gln Gln Trp Gly Ala Gly Leu Leu Lys Pro Ser Glu
1          5          10          15

Thr Leu Ser Leu Thr Cys Ala Val Phe Gly Gly Ser Phe Ser Gly Phe
          20          25          30

Ser Trp Ser Trp Ile Arg Gln Thr Pro Gly Lys Gly Leu Glu Trp Ile
          35          40          45

Gly Glu Ile Asp Tyr Arg Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
          50          55          60

Ser Arg Val Thr Ile Leu Arg Asp Thr Ser Arg Ser Gln Phe Ser Leu
65          70          75          80

Lys Leu Ser Ser Val Thr Ala Ala Asp Ser Ala Val Phe Tyr Cys Ala
          85          90          95

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Arg Gly Gly Pro Arg Phe Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
 100 105 110

Val Ser Ser
 115

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 <212> DNA
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<220>
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 <222> (1)..(33)

<220>
 <221> misc_feature
 <222> (33)..(33)
 <223> unknown nucleotide

<400> 17
 agg gcc agt cag agt gtt agc agc tac tta gcn
 Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
 1 5 10

33

<210> 18
 <211> 11
 <212> PRT
 <213> synthetic

<220>
 <221> misc_feature
 <222> (33)..(33)
 <223> unknown nucleotide

<400> 18

Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
 1 5 10

<210> 19
 <211> 21
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(21)
 <223> Sequence from human antibody generated in mouse.

<400> 19
 gat gca tcc aac agg gcc act
 Asp Ala Ser Asn Arg Ala Thr
 1 5

21

<210> 20
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 20

Asp Ala Ser Asn Arg Ala Thr
 1 5

<210> 21
 <211> 27
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(27)
 <223> Sequence from human antibody generated in mouse.

<400> 21
 cag cag cgt agc aac tgg cct ctc act
 Gln Gln Arg Ser Asn Trp Pro Leu Thr
 1 5

27

<210> 22
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 22

Gln Gln Arg Ser Asn Trp Pro Leu Thr
 1 5

<210> 23
 <211> 321
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(318)
 <223> Sequence from human antibody generated in mouse. V-segment: L6
 and J-segment: JK4

<220>
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 <222> (70)..(102)

<220>
 <221> misc_feature
 <222> (102)..(102)
 <223> unknown nucleotide

<220>
 <221> CDR2

<222> (148)..(168)

<220>

<221> CDR3

<222> (265)..(291)

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gaa	att	gtg	ttg	aca	cag	tct	cca	gcc	acc	ctg	tct	ttg	tct	cca	ggg	48
Glu	Ile	Val	Leu	Thr	Gln	Ser	Pro	Ala	Thr	Leu	Ser	Leu	Ser	Pro	Gly	
1				5					10					15		

gaa	aga	gcc	acc	ctc	tcc	tgc	agg	gcc	agt	cag	agt	gtt	agc	agc	tac	96
Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Tyr	
			20					25					30			

tta	gcn	tgg	tac	caa	cag	aaa	cct	ggc	cag	gct	ccc	agg	ctc	ctc	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu	Ile	
		35					40					45				

tat	gat	gca	tcc	aac	agg	gcc	act	ggc	atc	cca	gcc	agg	ttc	agt	ggc	192
Tyr	Asp	Ala	Ser	Asn	Arg	Ala	Thr	Gly	Ile	Pro	Ala	Arg	Phe	Ser	Gly	
	50					55					60					

agt	ggg	tct	ggg	aca	gac	ttc	act	ctc	acc	atc	agc	agc	cta	gag	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Glu	Pro	
65					70					75				80		

gaa	gat	ttt	gca	gtt	tat	tac	tgt	cag	cag	cgt	agc	aac	tgg	cct	ctc	288
Glu	Asp	Phe	Ala	Val	Tyr	Tyr	Cys	Gln	Gln	Arg	Ser	Asn	Trp	Pro	Leu	
				85					90					95		

act	ttc	ggc	gga	ggg	acc	aag	gtg	gag	atc	aaa						321
Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Glu	Ile							
			100					105								

<210> 24

<211> 106

<212> PRT

<213> Homo sapiens

<220>

<221> misc_feature

<222> (102)..(102)

<223> unknown nucleotide

<400> 24

Glu	Ile	Val	Leu	Thr	Gln	Ser	Pro	Ala	Thr	Leu	Ser	Leu	Ser	Pro	Gly
1				5					10					15	

Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Tyr
			20					25					30		

Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu	Ile
		35					40					45			

Tyr	Asp	Ala	Ser	Asn	Arg	Ala	Thr	Gly	Ile	Pro	Ala	Arg	Phe	Ser	Gly
	50					55					60				

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Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Leu
85 90 95

Thr Phe Gly Gly Gly Thr Lys Val Glu Ile
100 105

<210> 25
<211> 15
<212> DNA
<213> synthetic

<220>
<221> CDS
<222> (1)..(15)

<400> 25
atc ttt ggg atg agc
Ile Phe Gly Met Ser
1 5

15

<210> 26
<211> 5
<212> PRT
<213> synthetic

<400> 26

Ile Phe Gly Met Ser
1 5

<210> 27
<211> 51
<212> DNA
<213> Homo sapiens

<220>
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<222> (1)..(51)
<223> Sequence from human antibody generated in mouse.

<400> 27
aac ata aag caa gat gga agt gag aaa tac tat gtg gac tct gtg aag
Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val Lys
1 5 10 15

48

ggc
Gly

51

<210> 28
<211> 17

<212> PRT
<213> Homo sapiens

<400> 28

Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val Lys
1 5 10 15

Gly

<210> 29
<211> 57
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(57)
<223> Sequence from human antibody generated in mouse.

<400> 29
gat cgg ttt tac tat ggt tcg ggg agt tat tat tac tac tac aac ggt 48
Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr Asn Gly
1 5 10 15

atg gac gtc 57
Met Asp Val

<210> 30
<211> 19
<212> PRT
<213> Homo sapiens

<400> 30

Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr Asn Gly
1 5 10 15

Met Asp Val

<210> 31
<211> 384
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(384)
<223> Sequence from human antibody generated in mouse.

V-segment:3-7, d-segment: 3-10 and J-segment JH6b

<220>

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<221> CDR1
<222> (91)..(102)

<220>
<221> CDR2
<222> (148)..(198)

<220>
<221> CDR3
<222> (295)..(351)

<400> 31
gag gtg caa cta gtg gag tct ggg gga ggc ttg gtc cag cct ggg ggg 48
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttt aat atc ttt 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Ile Phe
20 25 30

ggg atg agc tgg gtc cgc cag gct cca ggg aaa ggg ctg gag tgg gtg 144
Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

gcc aac ata aag caa gat gga agt gag aaa tac tat gtg gac tct gtg 192
Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
50 55 60

aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

gcg agg gat cgg ttt tac tat ggt tcg ggg agt tat tat tac tac tac 336
Ala Arg Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr
100 105 110

aac ggt atg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca 384
Asn Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 32
<211> 128
<212> PRT
<213> Homo sapiens

<400> 32
Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Ile Phe
20 25 30

Gly Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

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Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Tyr Tyr Val Asp Ser Val
50 55 60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Ala Arg Asp Arg Phe Tyr Tyr Gly Ser Gly Ser Tyr Tyr Tyr Tyr Tyr
100 105 110

Asn Gly Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
115 120 125

<210> 33
<211> 33
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(33)
<223> Sequence from human antibody generated in mouse.

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Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

33

<210> 34
<211> 11
<212> PRT
<213> Homo sapiens

<400> 34
Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
1 5 10

<210> 35
<211> 21
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(21)
<223> Sequence from human antibody generated in mouse.

<400> 35
gat gca tcc aac agg gcc act
Asp Ala Ser Asn Arg Ala Thr

21

1 5

<210> 36
 <211> 7
 <212> PRT
 <213> Homo sapiens

<400> 36

Asp Ala Ser Asn Arg Ala Thr
 1 5

<210> 37
 <211> 30
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(30)
 <223> Sequence from human antibody generated in mouse.

<400> 37
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 Gln Gln Arg Ser Asn Trp Pro Pro Phe Thr
 1 5 10

30

<210> 38
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 38

Gln Gln Arg Ser Asn Trp Pro Pro Phe Thr
 1 5 10

<210> 39
 <211> 324
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(324)
 <223> Sequence from human antibody generated in mouse.

V-segment: L6 and J-segment: JK3

<220>
 <221> CDR1
 <222> (70)..(102)

<220>
 <221> CDR2
 <222> (148)..(168)

<220>

<221> CDR3

<222> (265)..(294)

<400> 39

gaa att gtg ttg aca cag tct cca gcc acc ctg tct ttg tct cca ggg 48
 Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
 1 5 10 15

gaa aga gcc acc ctc tcc tgc agg gcc agt cag agt gtt agc agc tac 96
 Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

tta gcc tgg tac caa cag aaa cct ggc cag gct ccc agg ctc ctc atc 144
 Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45

tat gat gca tcc aac agg gcc act ggc atc cca gcc agg ttc agt ggc 192
 Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

agt ggg tct ggg aca gac ttc act ctc acc atc agc agc cta gag cct 240
 Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
 65 70 75 80

gaa gat ttt gca gtt tat tac tgt cag cag cgt agc aac tgg cct cca 288
 Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Pro
 85 90 95

ttc act ttc ggc cct ggg acc aaa gtg gat atc aaa 324
 Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
 100 105

<210> 40

<211> 108

<212> PRT

<213> Homo sapiens

<400> 40

Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser Leu Ser Pro Gly
 1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr
 20 25 30

Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile
 35 40 45

Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly
 50 55 60

Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
 65 70 75 80

Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser Asn Trp Pro Pro
 85 90 95

Phe Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
100 105

<210> 41
<211> 15
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(15)
<223> Sequence from human antibody generated in mouse.

<400> 41
agc ttt tgg atg agc
Ser Phe Trp Met Ser
1 5

15

<210> 42
<211> 5
<212> PRT
<213> Homo sapiens

<400> 42
Ser Phe Trp Met Ser
1 5

<210> 43
<211> 30
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(30)
<223> Sequence from human antibody generated in mouse.

<400> 43
aac ata aag caa gat gga agt gag aaa ttc
Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe
1 5 10

30

<210> 44
<211> 10
<212> PRT
<213> Homo sapiens

<400> 44
Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe
1 5 10

<210> 45

<211> 54
 <212> DNA
 <213> Homo sapiens

<220>
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 <222> (1)..(54)
 <223> Sequence from human antibody generated in mouse.

<400> 45
 gat cgt att aca atg gtt cgg ccc tat tac tac ttc tac aac ggt ctg 48
 Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn Gly Leu
 1 5 10 15
 gac gtc 54
 Asp Val

<210> 46
 <211> 18
 <212> PRT
 <213> Homo sapiens

<400> 46
 Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn Gly Leu
 1 5 10 15

Asp Val

<210> 47
 <211> 381
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)..(381)
 <223> Sequence from human antibody generated in mouse.

V-segment: 3-7, D-segment: 3-10 and J-segment: JH6b

<220>
 <221> CDR1
 <222> (91)..(102)

<220>
 <221> CDR2
 <222> (148)..(177)

<220>
 <221> CDR3
 <222> (295)..(348)

<400> 47
 gag gta cag ctg gtg gag tct ggg gga ggc ttg gtc cag ccg ggg ggg 48
 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly

HOI-14402.ST25.txt

1	5	10	15	
tcc ctg aga ctc tcc tgt gca gct tct gga ttc acc ttt agt agc ttt				96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe	20	25	30	
tggtg atg agc tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtg				144
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	35	40	45	
gcc aac ata aag caa gat gga agt gag aaa ttc tat gtg gac tct gtg				192
Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe Tyr Val Asp Ser Val	50	55	60	
aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat				240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr	65	70	75	80
ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt				288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	85	90	95	
gcg agg gat cgt att aca atg gtt cgg ccc tat tac tac ttc tac aac				336
Ala Arg Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn	100	105	110	
ggg ctg gac gtc tgg ggc caa ggg acc acg gtc acc gtc tcc tca				381
Gly Leu Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser	115	120	125	

<210> 48
 <211> 127
 <212> PRT
 <213> Homo sapiens

<400> 48

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly	1	5	10	15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Phe	20	25	30	
Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	35	40	45	
Ala Asn Ile Lys Gln Asp Gly Ser Glu Lys Phe Tyr Val Asp Ser Val	50	55	60	
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr	65	70	75	80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	85	90	95	
Ala Arg Asp Arg Ile Thr Met Val Arg Pro Tyr Tyr Tyr Phe Tyr Asn				

100

105

110

Gly Leu Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
 115 120 125

<210> 49
 <211> 930
 <212> DNA
 <213> Streptococcus pneumoniae

<220>
 <221> CDS
 <222> (1)..(930)
 <223> Sequence of Streptococcus pneumoniae surface adhesin A (PsaA)- A Variant

<400> 49
 atg aaa aaa tta ggt aca tta ctc gtt ctc ttt ctt tct gca atc att 48
 Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
 1 5 10 15
 ctt gta gca tgt gct agc gga aaa aaa gat aca act tct ggt caa aaa 96
 Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
 20 25 30
 cta aaa gtt gtt gct aca aac tca atc atc gct gat att act aaa aat 144
 Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
 35 40 45
 att gct ggt gac aaa att gac ctt cat agt atc gtt ccg att ggg caa 192
 Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
 50 55 60
 gac cca cac gaa tac gaa cca ctt cct gaa gac gtt aag aaa act tct 240
 Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
 65 70 75 80
 gag gct gat ttg att ttc tat aac ggt atc aac ctt gaa aca ggt ggc 288
 Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
 85 90 95
 aat gct tgg ttt aca aaa ttg gta gaa aat gcc aag aaa act gaa aac 336
 Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
 100 105 110
 aaa gac tac ttc gca gtc agc gac ggc gtt gat gtt atc tac ctt gaa 384
 Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
 115 120 125
 ggt caa aat gaa aaa gga aaa gaa gac cca cac gct tgg ctt aac ctt 432
 Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
 130 135 140
 gaa aac ggt att att ttt gct aaa aat atc gcc aaa caa ttg agc gcc 480
 Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
 145 150 155 160
 aaa gac cct aac aat aaa gaa ttc tat gaa aaa aat ctc aaa gaa tat 528
 Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
 165 170 175

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act gat aag tta gac aaa ctt gat aaa gaa agt aag gat aaa ttt aat	576
Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn	
180 185 190	
aag atc cct gct gaa aag aaa ctc att gta acc agc gaa gga gca ttc	624
Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe	
195 200 205	
aaa tac ttc tct aaa gcc tat ggt gtt cca agt gcc tac atc tgg gaa	672
Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu	
210 215 220	
atc aat act gaa gaa gaa gga act cct gaa caa atc aag acc ttg gtt	720
Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val	
225 230 235 240	
gaa aaa ctt cgc caa aca aaa gtt cca tca ctc ttt gta gaa tca agt	768
Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser	
245 250 255	
gtg gat gac cgt cca atg aaa act gtt tct caa gac aca aac atc cca	816
Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro	
260 265 270	
atc tac gca caa atc ttt act gac tct atc gca gaa caa ggt aaa gaa	864
Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu	
275 280 285	
ggc gac agc tac tac agc atg atg aaa tac aac ctt gac aag att gct	912
Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala	
290 295 300	
gaa gga ttg gca aaa taa	930
Glu Gly Leu Ala Lys	
305	

<210> 50
 <211> 309
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 50

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile	
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Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys	
20 25 30	
Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn	
35 40 45	
Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln	
50 55 60	
Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser	
65 70 75 80	

HOI-14402.ST25.txt

Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
85 90 95

Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
100 105 110

Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
115 120 125

Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
130 135 140

Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
145 150 155 160

Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
165 170 175

Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn
180 185 190

Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe
195 200 205

Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu
210 215 220

Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val
225 230 235 240

Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser
245 250 255

Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro
260 265 270

Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu
275 280 285

Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala
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Glu Gly Leu Ala Lys
305

<210> 51

<211> 25
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 51

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
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Leu Val Ala Cys Ala Ser Gly Lys Lys
 20 25

<210> 52
 <211> 25
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 52

Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys Leu Lys Val Val
 1 5 10 15

Ala Thr Asn Ser Ile Ile Ala Asp Ile
 20 25

<210> 53
 <211> 25
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 53

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 1 5 10 15

His Ser Ile Val Pro Ile Gly Gln Asp
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<210> 54
 <211> 65
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 54

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
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Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
 20 25 30

Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
 35 40 45

Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
 50 55 60

Asp
 65

<210> 55
 <211> 960
 <212> DNA
 <213> Streptococcus pneumoniae

<220>
 <221> CDS
 <222> (1)..(930)
 <223> equence of Streptococcus pneumoniae surface adhesin A (PsaA)

<400> 55
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 1 5 10 15
 ctt gta gca tgt gct agc gga aaa aaa gat aca act tct ggt caa aaa 96
 Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
 20 25 30
 cta aaa gtt gtt gct aca aac tca atc atc gct gat att act aaa aat 144
 Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
 35 40 45
 att gct ggt gac aaa att gac ctt cat agt atc gtt ccg att ggg caa 192
 Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
 50 55 60
 gac cca cac gaa tac gaa cca ctt cct gaa gac gtt aag aaa act tct 240
 Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
 65 70 75 80
 gag gct gat ttg att ttc tat aac ggt atc aac ctt gaa aca ggt ggc 288
 Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
 85 90 95
 aat gct tgg ttt aca aaa tta gta gaa aat gcc aag aaa act gaa aac 336
 Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
 100 105 110
 aaa gac tac ttc gca gtc agc gac ggc gtt gat gtt atc tac ctt gaa 384
 Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
 115 120 125
 ggt caa aat gaa aaa gga aaa gaa gac cca cac gct tgg ctt aac ctt 432
 Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
 130 135 140
 gaa aac ggt att att ttt gct aaa aat atc gcc aaa caa ttg agc gcc 480
 Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
 145 150 155 160
 aaa gac cct aac aat aaa gaa ttc tat gaa aaa aat ctc aaa gaa tat 528
 Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
 165 170 175

HOI-14402.ST25.txt

act gat aag tta gac aaa ctt gat aaa gaa agt aag gat aaa ttt aat	576
Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn	
180 185 190	
aag atc cct gct gaa aag aaa ctc att gta acc agc gaa gga gca ttc	624
Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe	
195 200 205	
aaa tac ttc tct aaa gcc tat ggt gtt cca agt gcc tac atc tgg gaa	672
Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu	
210 215 220	
atc aat act gaa gaa gaa gga act cct gaa caa atc aag acc ttg gtt	720
Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val	
225 230 235 240	
gaa aaa ctt cgc caa aca aaa gtt cca tca ctc ttt gta gaa tca agt	768
Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser	
245 250 255	
gtg gat gac cgt cca atg aaa act gtt tct caa gac aca aac atc cca	816
Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro	
260 265 270	
atc tac gca caa atc ttt act gac tct atc gca gaa caa ggt aaa gaa	864
Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu	
275 280 285	
ggc gac agc tac tac agc atg atg aaa tac aac ctt gac aag att gct	912
Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala	
290 295 300	
gga gga ttg gca aaa taa gacaagattg ctgaaggatt ggcaaaaataa	960
Gly Gly Leu Ala Lys	
305	

<210> 56
 <211> 309
 <212> PRT
 <213> Streptococcus pneumoniae

<400> 56

Met Lys Lys Leu Gly Thr Leu Leu Val Leu Phe Leu Ser Ala Ile Ile
1 5 10 15

Leu Val Ala Cys Ala Ser Gly Lys Lys Asp Thr Thr Ser Gly Gln Lys
20 25 30

Leu Lys Val Val Ala Thr Asn Ser Ile Ile Ala Asp Ile Thr Lys Asn
35 40 45

Ile Ala Gly Asp Lys Ile Asp Leu His Ser Ile Val Pro Ile Gly Gln
50 55 60

Asp Pro His Glu Tyr Glu Pro Leu Pro Glu Asp Val Lys Lys Thr Ser
65 70 75 80

HOI-14402.ST25.txt

Glu Ala Asp Leu Ile Phe Tyr Asn Gly Ile Asn Leu Glu Thr Gly Gly
85 90 95

Asn Ala Trp Phe Thr Lys Leu Val Glu Asn Ala Lys Lys Thr Glu Asn
100 105 110

Lys Asp Tyr Phe Ala Val Ser Asp Gly Val Asp Val Ile Tyr Leu Glu
115 120 125

Gly Gln Asn Glu Lys Gly Lys Glu Asp Pro His Ala Trp Leu Asn Leu
130 135 140

Glu Asn Gly Ile Ile Phe Ala Lys Asn Ile Ala Lys Gln Leu Ser Ala
145 150 155 160

Lys Asp Pro Asn Asn Lys Glu Phe Tyr Glu Lys Asn Leu Lys Glu Tyr
165 170 175

Thr Asp Lys Leu Asp Lys Leu Asp Lys Glu Ser Lys Asp Lys Phe Asn
180 185 190

Lys Ile Pro Ala Glu Lys Lys Leu Ile Val Thr Ser Glu Gly Ala Phe
195 200 205

Lys Tyr Phe Ser Lys Ala Tyr Gly Val Pro Ser Ala Tyr Ile Trp Glu
210 215 220

Ile Asn Thr Glu Glu Glu Gly Thr Pro Glu Gln Ile Lys Thr Leu Val
225 230 235 240

Glu Lys Leu Arg Gln Thr Lys Val Pro Ser Leu Phe Val Glu Ser Ser
245 250 255

Val Asp Asp Arg Pro Met Lys Thr Val Ser Gln Asp Thr Asn Ile Pro
260 265 270

Ile Tyr Ala Gln Ile Phe Thr Asp Ser Ile Ala Glu Gln Gly Lys Glu
275 280 285

Gly Asp Ser Tyr Tyr Ser Met Met Lys Tyr Asn Leu Asp Lys Ile Ala
290 295 300

Gly Gly Leu Ala Lys
305